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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,842	11/15/2005	Atsushi Yamagishi	279167US2PCT	5824

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EXAMINER	
BASHAW, HEIDI M	

ART UNIT	PAPER NUMBER
3732	

NOTIFICATION DATE	DELIVERY MODE
06/20/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/551,842	YAMAGISHI, ATSUSHI	
	Examiner	Art Unit	
	HEIDI M. BASHAW	3732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/3/2005, 1/19/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 22 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583- 84, 32 USPQ2d at 1035.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 11-13 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 11 recites the limitation "the upper threshold F_1" in line 3-4. There is insufficient antecedent basis for this limitation in the claim.

5. Claim 12 recites the limitation "the lower threshold E_2" in line 23-24. There is insufficient antecedent basis for this limitation in the claim.

6. Claim 13 recites the limitation "the upper threshold F_1" in line 3-4. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Alfano 4,479,499.

3. Re claim 1, Alfano teaches a dental caries detecting device comprising an ultraviolet light source (col. 5, l. 57), a fluorescence receiving portion that receives fluorescence from a tooth in response to ultraviolet irradiation from the ultraviolet light source 27, a fluorescence data analysis portion 33 that analyzes fluorescence data transmitted from the fluorescence receiving portion and a data display portion 35 that displays data analyzed by the fluorescence data analysis portion, the fluorescence data

analysis portion analyzing the fluorescence data based on the fluorescence intensities in at least two wavelength bands in a visible light range (col. 6, ll. 26-47). As to claim 2, Alfano further teaches the fluorescence data analysis portion analyzing data based on a plurality of fluorescence intensities in at least one wavelength band that changes in response to change in the light intensity of the ultraviolet irradiation (col. 7, ll. 35-43).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3-5 and 9-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alfano 4,479,499.

6. Re claim 3, Alfano teaches the dental carries detecting device wherein the fluorescence data analysis portion calculates the degree of progress of dental caries based on the fluorescence intensity in a first wavelength and the fluorescence intensity in a second wavelength. As to claim 4, Alfano further teaches the fluorescence intensity in a third wavelength (col. 6, ll. 26-37). Alfano does not specifically teach the wavelength and waveband of from 500nm to 810 nm and 0.1nm to 260nm for the first Wavelength, 380 nm to 550 nm and 0.1 nm to 170 nm for the second wavelength and 450 nm to 650 nm and 0.1 nm to 200 nm for the third wavelength, however, it would have been a mater of obvious design choice to modify Alfano to select optimal ranges preferred by the user since it has been held where the general conditions of a claim are

disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) MPEP 2144.05 II A). As to claim 5, Alfano teaches the fluorescence receiving portion comprises an optical device 17. As to claim 9, Alfano teaches a dental caries detecting method that irradiates a measuring area of a tooth with ultraviolet light from a light source and detects a dental caries based on fluorescence from the measuring area including a first step of obtaining fluorescence information from the measuring area, a second step of obtaining the intensity of the fluorescence in at least two wavelength bands and a third step of carrying out calculation based on the fluorescence intensities and determining the presence/absence of dental caries and/or degree of progress of dental caries based on the result of the calculation (col. 3, ll. 21, col. 7, ll. 6-10). As to claim 10, Alfano teaches the ratio of the signals produced can be used (col. 7, ll. 17-21). Alfano further teaches that a change in the magnitude of the signal will indicate the presence of caries (col. 3, ll. 47-51), therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to the calculation is compared to a known value in order to determine if there is presence of dental caries. As to claim 11, it would have been obvious to one having ordinary skill in the art that if dental caries was detected in the previous step of comparing the value to the lower end of the spectrum, to compare the value with the upper end of the spectrum to determine the severity of the dental caries. As to claim 12, Alfano teaches the method as discussed above including measuring two areas, obtaining fluorescence from the measuring area, obtaining the fluorescence intensities in at least two wavelength bands and calculating a

dental caries degree. As to claims 14 and 23, Alfano teaches the method of obtaining information for at least two different light intensities and calculating the possibility of dental caries and determining that there is a possibility of dental caries if the sign of the result obtained from the formula is positive (col. 7, ll. 6-10). Alfano does not teach calculating the dental carries degree using the exact formulas as claimed however, it would have been obvious to one having ordinary skill in the art at the time of the invention to use a specific mathematical formula as a matter of obvious choice in known calculations to obtain the desired results. It would have been obvious to one having ordinary skill in the art that if dental caries was detected in the previous step of comparing the value to the lower end of the spectrum, to compare the value with the upper end of the spectrum to determine the severity of the dental caries.

7. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alfano 4,479,499 as applied to claim 5 above, and further in view of Everett et al. 2002/0093655 (Everett).

8. Alfano teaches the dental caries detecting device wherein the output intensity is adjustable (col. 7, ll. 34-43). Alfano does not teach the optical device is a color CCD. Everett teaches the optical device is a color CCD (par. 30). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Alfano in view of Everett in order to increase the sensitivity of the system as taught by Everett (par. 30).

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alfano 4,479,499 in view of Everett et al. 2002/0093655 (Everett) as applied to claim 7 above, and further in view of Karazivan et al. 2005/0181333 (Karazivan).

10. Alfano in view of Everett does not teach the light source is an LED. Karazivan teaches the light source is an LED (par. 34). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Alfano in view of Everett further in view of Karazivan as a matter of obvious design choice since Karazivan teaches a variety of light sources including the light source taught by Alfano (par. 34).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HEIDI M. BASHAW whose telephone number is (571)270-3081. The examiner can normally be reached on Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cris Rodriguez can be reached on 571-272-4964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Heidi Bashaw
Examiner
Art Unit 3732

/John J Wilson/
Primary Examiner
Art Unit 3732

HMB